Wisconsin Groundwater Advisory Committee

2006 REPORT TO THE LEGISLATURE on Groundwater Management Areas

December 2006

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State of Wisconsin \ GROUNDWATER ADVISORY COMMITTEE

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To: Senate Committee on Natural Resources & Transportation
Assembly Committee on Natural Resources
The Honorable Governor Jim Doyle

The Groundwater Advisory Committee is pleased to submit this report to the Senate Committee on Natural Resources & Transportation and the Assembly Committee on Natural Resources in fulfillment of its charge under 2003 Wisconsin Act 310, sec. 15(2)(e). The Groundwater Advisory Committee has worked diligently over the past 18 months to identify issues and develop recommendations related to management of groundwater resources within groundwater management areas (GMAs). The enclosed report addresses groundwater management recommendations within GMAs and also addresses other issues related to groundwater quantity and quality management.

Effective management of groundwater resources in areas that have already experienced substantial regional impacts, such as those within the two groundwater management areas identified in sec. 281.34(9)(a), Wis. Stats, will require an extraordinary level of collaboration between the state, multiple levels of local government, and local stakeholders. This report contains recommendations that, if implemented, would establish a framework by which that collaboration would take place within the broad structure created by Act 310. Clearly, much additional work remains to be done in terms of refining the planning and implementation processes. Even with the recommendations contained in this report, many important details concerning the cooperation, planning, and implementation aspects of managing groundwater resources within a GMA will need to be discussed and developed. Presumably, most of these discussions will take place as part of the administrative rules process contemplated in our recommendations.

The Groundwater Advisory Committee has recommended an approach to encourage proactive discussion and intervention in areas with existing groundwater quantity issues as well as in those areas where such problems may just be emerging. We have elected to call these emerging problem areas groundwater attention areas or GAAs. While the specific aspects of identifying and managing GAAs are certainly open for debate, the basic concepts of proactive management and intervention are critical components of an effective groundwater management policy.

During the next 12 months, the Groundwater Advisory Committee will continue its deliberation of groundwater quantity issues as directed under Act 310, sec. 15(2)(g), and will submit a second report to the Legislature before the end of 2007. That report will focus on protection of springs, trout streams, outstanding resource waters (groundwater protection areas, or GPAs) and exceptional resource waters from impacts caused by construction and operation of high capacity wells.

The Groundwater Advisory Committee would be pleased to discuss the enclosed report at a joint meeting of the standing Committees. Such a meeting might be valuable for the Committees to enhance their understanding of the recommendations made by the Groundwater Advisory Committee.

Sincerely,

Ron Kuehn, Chair
Groundwater Advisory Committee

Executive Summary

In 2004, the Wisconsin Legislature promulgated 2003 Wisconsin Act 310 to enhance the state's oversight of groundwater quantity issues. The Act expanded the State's authority to consider environmental impacts of high capacity wells. It also took the first step in addressing regional water quantity issues in Southeastern Wisconsin and the Lower Fox River Valley in the northeast portion of Wisconsin through establishment of two groundwater management areas in those regions. The Groundwater Advisory Committee, a diverse advisory body appointed by the governor and leaders of the State Senate and Assembly, was directed to submit a report to the Legislature at the end of 2006 that contains recommendations related to management of groundwater in groundwater management areas. The Committee is also directed to submit another report at the end of 2007 related primarily to the environmental aspects of high capacity well regulation.

The recommendations presented in this report establish the foundation for coordinated management of groundwater resources in areas of the state that have experienced both water quality and water quantity issues due to substantial groundwater drawdown from pumping. Many of the recommendations will require future legislative authorization or promulgation of administrative rules before they can be implemented.

At the core of the Committee's recommendations is the concept that the affected local governmental units should direct and control the planning process and that the groundwater planning process must be conducted in concert with other local initiatives such as land use planning and water system planning. It is also important that groundwater management plans delineate a clear set of best management practices, standards and goals so that all major users of groundwater in the groundwater management areas have a clear understanding of the expectations and limitations imposed by the plans. However, the Groundwater Advisory Committee also recognizes that effective groundwater management planning will necessitate an adaptive management approach through which the plan may be adjusted based on evaluation of the effectiveness of the plan's implementation.

The Groundwater Advisory Committee also considered three additional areas as potential additional groundwater management areas, Dane County, the Little Plover River Watershed and St. Croix County. Dane County and the Little Plover River Watershed have already experienced varying degrees of impacts related to groundwater drawdown. Following extensive debate, the Groundwater Advisory Committee concluded that none of these areas warranted designation as groundwater management area at this time. A motion to recommend the identification of Dane County as a Groundwater Management Area was narrowly defeated. A motion to declare St. Croix County as a Groundwater Attention Area was made, but was tabled. A motion to declare the Little Plover River Watershed a Groundwater Attention Area was unanimously adopted following failure of a motion to identify it as a Groundwater Management Area.. The Committee ultimately recommended that Dane County and the Little Plover River Watershed be identified as groundwater attention areas. The committee recommends this new designation to enable and encourage coordinated proactive planning and management in areas of emerging groundwater quantity problems.

The Groundwater Advisory Committee formulated a number of recommendations concerning funding of groundwater management activities within groundwater management areas. The recommended approach is to rely on program revenue funds generated through the well notification and high capacity well application fees to support the planning and management activities in groundwater management areas. Funding of mitigation activities is recommended to be accomplished with these same fees but it is unlikely that the level of available funding at any given time will be adequate to fully fund a substantial mitigation project in a groundwater management area. Recommendations are included that direct the DNR to develop administrative rules establishing funding guidelines for the distribution of funds to support planning, management, and mitigation in groundwater management areas, groundwater attention areas, and other areas of potential concern and also authorize the DNR to request additional funding support, when needed, to address mitigation.

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List of Acronyms

DNR - Department of Natural Resources
DOA - Wisconsin Department of Administration
GAA - Groundwater Attention Area
GAC - Groundwater Advisory Committee
GMAs - Groundwater Management Areas
GMP - Groundwater Management Plan
NEGMA - Northeast Groundwater Management Area
SEGMA - Southeast Groundwater Management Area
SEWRPC - Southeastern Wisconsin Regional Planning Commission

2006 Groundwater Advisory Committee Report to the Legislature

Chapter 1: Introduction

Background

On April 22, 2004 Governor Doyle signed a new groundwater protection law (2003 Wisconsin Act 310) that expands the State's authority to consider environmental impacts of high capacity wells and takes the first step in addressing regional water quantity issues in Southeastern Wisconsin and the Lower Fox River Valley. The law was the result of bipartisan cooperation in the legislature and collaboration by a wide and diverse array of stakeholders.

The Act directed the Department of Natural Resources (DNR) to establish two separate groundwater management areas (GMAs) in Southeastern Wisconsin and in Northeastern Wisconsin along the Lower Fox River Valley. These two areas are centered on and include Waukesha and Brown Counties, and the surrounding cities, villages and towns. They are areas of concentrated urban development where related extensive groundwater pumping has caused the water level of the deep sandstone aquifer to drop more than 150 feet since predevelopment. (Figure 1) Various groundwater modeling activities conducted in the two areas have delineated the areas most affected by substantial drawdown. In addition, the research has shown that besides simply lowering the level of the groundwater in these areas, the drawdown has induced water quality issues related to arsenic, radium and other parameters and is also resulting in diminished surface water flows as a result of changing groundwater flow patterns.

The principal objective of designating GMAs is to encourage a coordinated management strategy among the state, local government units, regional planning commissions, and public and private users of groundwater to address current and future problems caused by over-pumping of the groundwater. The DNR is directed to assist local government units and regional planning commissions in those areas as they undertake research and planning related to groundwater management.

In addition to creating the GMA framework, Act 310 also expanded the state's scope of authority over high capacity wells to include factors in addition to impacts on nearby municipal water supplies. Specifically, the law requires the department, as part of its approval process, to consider impacts to trout streams, springs, outstanding resource waters and exceptional resource waters and impacts from wells with high water loss. The department is currently engaged in the rule-making process to implement these portions of Act 310 and the new rule, Ch. NR 820, should be effective in mid-2007.

The Act established a Groundwater Advisory Committee (GAC). Members of the Groundwater Advisory Committee were appointed by the Governor and leaders from both the State Senate and State Assembly. The members represent municipal, environmental, agricultural and industrial interests. The Act directed the Committee to recommend legislation and administrative rules that address the management of groundwater within groundwater management areas and identify any other areas of the state where a coordinated strategy may be needed.

The Groundwater Advisory Committee is directed to submit a report at the end of 2006 that contains recommendations related to management of groundwater in GMAs and another report at the end of 2007 related primarily to the environmental aspects of high capacity well regulation. The GAC has met regularly since April 2005. For detailed information concerning Groundwater Advisory Committee organization, meetings and supporting information refer to http://dnr.wi.gov/org/water/dwg/gac/index.htm.

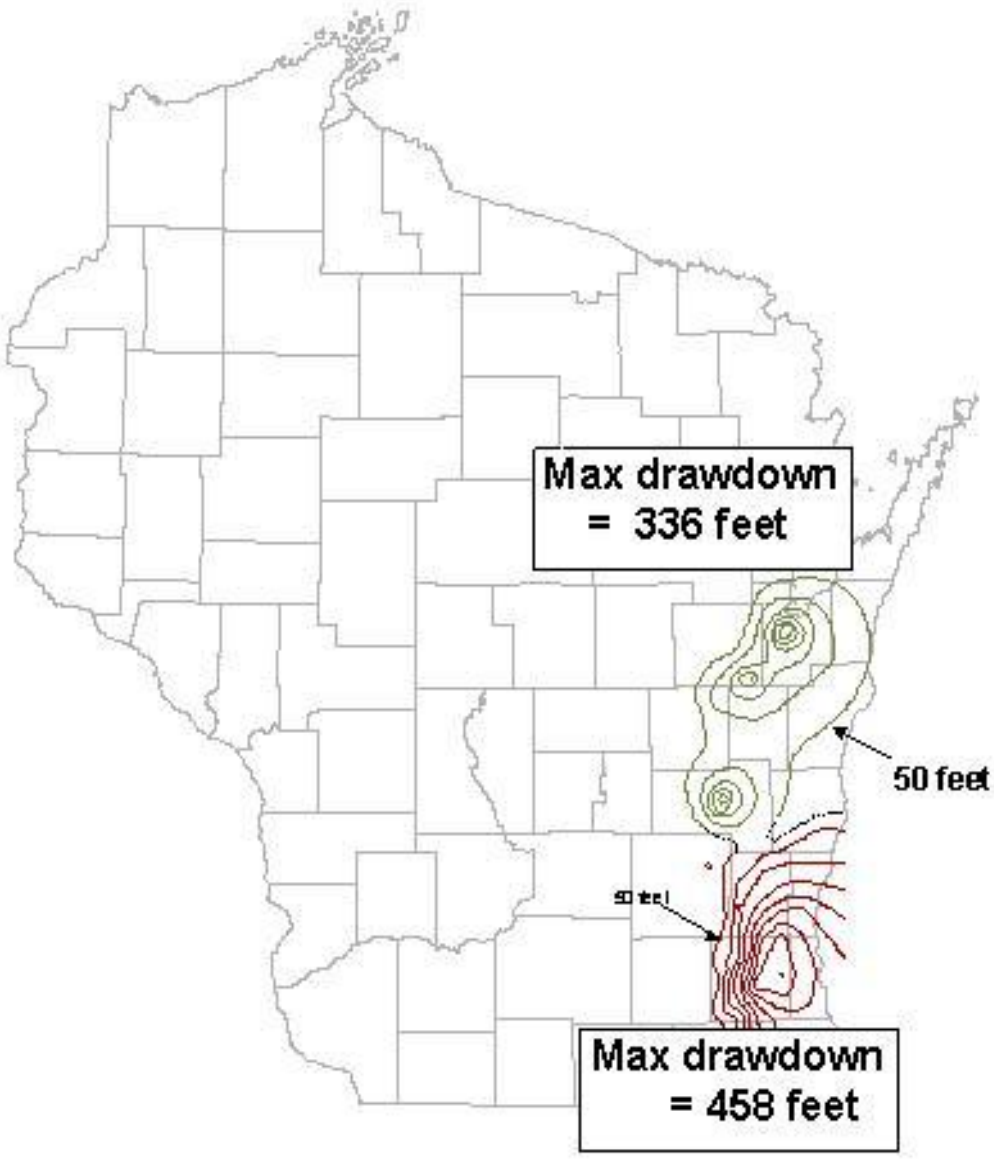

Figure 1 – Drawdown in the Sandstone Aquifer (Contour interval is 50 feet.)
{Based on Conlon (2000) and Feinstein et al (2003)}

Legislative Charge

Pursuant to Act 310, the Groundwater Advisory Committee is directed to submit a report to the legislature's environmental standing committees by December 31, 2006. The report must include recommendations for legislation and for administrative rules to implement the legislation related to groundwater management areas. The following items were specifically identified in the Act as being necessary elements of the report:

1. Groundwater management areas (GMAs) as created by the act.
2. Other areas of the state in which the withdrawal of groundwater over the long term adversely affects the availability of water for use, adversely affects water quality; or has a significant adverse environmental impact.
3. Whether any of these other areas of the state should be designated as GMAs.
4. A coordinated strategy for addressing groundwater management issues by affected local governmental units and regional planning commissions.
5. A mitigation program for GMAs.
6. How and when to remove the GMA designation from an area.

The second report which is due at the end of 2007 will address different elements of Act 310. The Groundwater Advisory Committee is directed to assess the effectiveness of Act 310 and how it has been implemented by the department and formulate recommendations concerning program implementation and necessary legislative changes. The law directs the Groundwater Advisory Committee to address the following elements in its 2007 report:

1. Necessary changes in the regulation of high capacity wells that are in groundwater protection areas, that have a water loss of 95 percent or more, or that have a significant environmental impact on a spring.
2. The definition, as created in Act 310, of a spring.
3. Management strategies that permit adaptation of the regulation of high capacity wells as relevant information becomes available or groundwater conditions change.
4. The potential use of general permits for high capacity wells.
5. Factors the department should consider in rules used to determine whether a high capacity well causes a significant environmental impact.

Chapter 2: Designated Groundwater Management Areas

2.1 Southeast GMA

The proposed Southeast Wisconsin Groundwater Management Area (SEGMA) consists of the following:

- Kenosha County.
- Milwaukee County.
- Ozaukee County.
- Racine County
- Waukesha County.
- The portions of Walworth County consisting of the U.S. Public Land Survey Townships of East Troy, Spring Prairie, Lyons, Bloomfield, Linn and Geneva, with the exception of the village of Williams Bay and city of Elkhorn.
- Washington County with the exception of the U.S. Public Land Survey Townships of Wayne and Kewaskum.

The SEGMA consists of part or all of the seven counties of Kenosha, Milwaukee, Ozaukee, Racine, Waukesha, Walworth and Washington. Approximately 36 percent of the State's population resides within those seven counties although those counties only represent 4.8 percent of the land area of the State (Wisconsin, 2005). Thus, the southeast part of the State is the most populous part of the state, hosting the City of Milwaukee and surrounding suburbs. The Racine and Kenosha areas are additional significant population centers between the Milwaukee and Chicago metropolitan areas. The boundary of the SEGMA is shown in Figure 2.

The sources of water that are frequently used in the southeast part of the State are as follows:

- Lake Michigan is the source of water for several public utilities that are located on or near the lake. According to the Southeastern Wisconsin Regional Planning Commission (SEWRPC,2002), approximately 63 percent of the population of the seven county area relies on Lake Michigan water. Lake Michigan however is only a viable option for water users located within the Lake Michigan Basin, unless authorization for an inter-basin transfer has been granted to users outside of the basin. The surface water watershed boundary between the Lake Michigan Basin and the Mississippi River basin passes through the SEGMA, as shown in Figure 3.

- The deep aquifers are the most heavily used groundwater sources. These aquifers are below the Maquoketa Formation. Wells that draw water from these aquifers are capable of delivering significant yields, however the aquifers are being drawn down by heavy usage and water quality is declining. In much of the SEGMA, the water level has been drawn down several hundred feet compared to historic levels and it continues to decline. For example according to SEWRPC (2002), the demand on the deep aquifer is 31.5 million gallons per day within Waukesha County, however the recharge rate is 14.8 million gallons per day. This disparity between pumping and recharge within the area has resulted in a maximum drawdown in the deep aquifer in excess of 400 feet.

- The shallow bedrock aquifers consist of the bedrock formations above the Maquoketa Formation. Generally, wells constructed in the shallow bedrock aquifers are less productive than the deeper

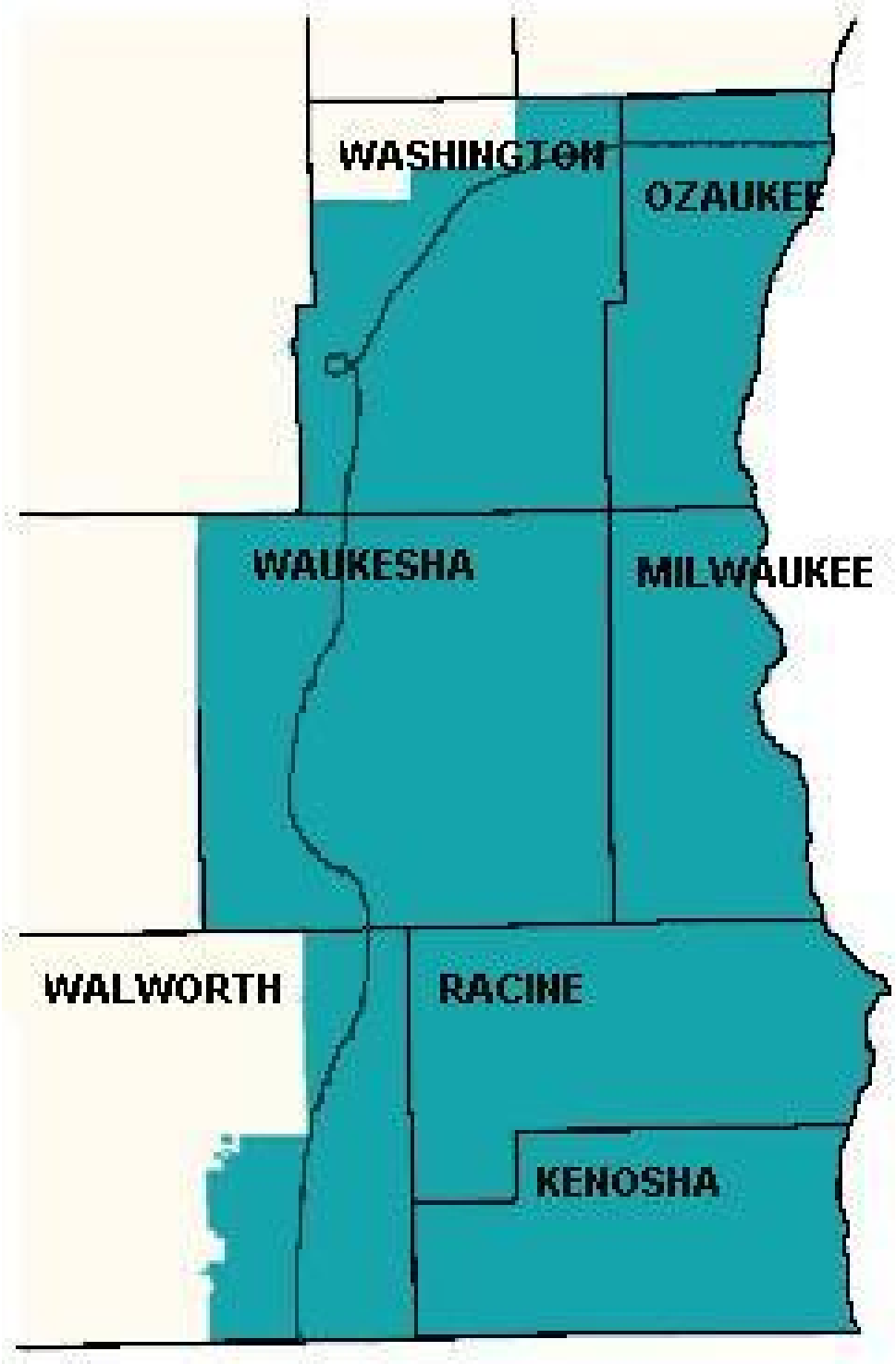

Figure 2 – Southeast Wisconsin Groundwater Management Area

Figure 3 – Major Surface Water Basins in Wisconsin

aquifer. The shallow aquifers however are increasingly viewed as a potential water source by deep aquifer users that suffer water quality problems.

- The unconsolidated aquifers consist of many discontinuous sand and gravel deposits of variable thickness and productivity. Generally, these aquifers are not a viable water supply for large users but the sand and gravel is relied upon for small private water users. This is especially the case in rural areas in the western part of the SEGMA where the unconsolidated aquifers are present. Generally, the unconsolidated aquifers are not present in the eastern part of the SEGMA.

Since 1994, SEWRPC has taken a leadership role in assessing water resource needs, trends and availability within the region. They have published several reports in collaboration with the U.S. Geological Survey, the Wisconsin Geological & Natural History Survey and other researchers to characterize the groundwater resources within the region. SEWRPC is preparing a regional water supply plan that is intended to be consistent with recommendations contained in this report. Development of that plan is being overseen by an advisory committee comprised of representatives of the constituent counties and municipalities; State and Federal agencies; the academic community; and of business and industry.

2.2 Northeast GMA

The proposed Northeast Wisconsin Groundwater Management Area (NEGMA) consists of the following:

- Brown County.
- The portions of Calumet County consisting of the U.S. Public Land Survey Townships of Woodville and Harrison and the city of Sherwood.
- The portions of Outagamie County consisting of the U.S. Public Land Survey Townships of Grand Chute, Vanden Broek, Buchanan, Freedom and Kaukauna, including the cities of Appleton, Kimberly, Combined Locks, Little Chute and Kaukauna.

Approximately 8.0 percent of the residents of the State reside within the three counties that are partially or fully within the NEGMA, which constitutes approximately 2.7 percent of the land surface of the State. The boundary of the NEGMA is shown in Figure 4.

The entire NEGMA is within the Lake Michigan Basin. Unlike the SEGMA, there are no regulatory constraints preventing water system interconnections and water transfers from one location to another within the GMA.

There are three separate aquifers in the area, as follows:

- The deep aquifer consists of the Elk Mound Group, also referred to as the deep sandstone aquifer. Significant water yields are generally available from wells that draw water from this aquifer. This aquifer however has declining water quality in the area surrounding Green Bay.

- The middle aquifer consists of the St. Peter Formation, which is a sandstone aquifer. This aquifer is not present throughout the GMA and where it is present, it may not provide a significant yield to large users.

- The uppermost aquifer consists of discontinuous sand and gravel deposits that overlie bedrock in some areas or fractured dolomite of the Sinnipee Group in other areas. Generally, wells constructed in the upper aquifer will not yield sufficient water to supply large users. Where the Sinnipee Group or the sand and gravel deposits are not present, the finer grained deposits that overlie bedrock may not yield sufficient water to supply wells.

There are two separate cones of groundwater depression within the NEGMA, one is located in the population center of Green Bay and surrounding communities, the other is located at in the population center of Appleton, Kaukauna and neighboring communities. The two cones of depression described above merge in between these two population centers. The two population centers are described as follows:

- Green Bay and Surrounding Communities. Prior to 1957, all significant water users in the area relied on groundwater as their source of water. Because of significant drawdown and continued decline in water levels in the deeper aquifer, in 1957 the City of Green Bay started to draw water from Lake Michigan for part of their water needs. Initially after the switch to a surface water supply, water levels within the deep aquifer partially recovered. However, that recovery was short-lived and water levels within the deep aquifer continued to decline over time as increased water usage by other communities surrounding Green Bay increased the amount of water withdrawn from the deep aquifer.

  More recently, declining groundwater quality, particularly increasing levels of radioactive contaminants, caused Green Bay to expand their usage of Lake Michigan water. The surrounding communities of De Pere, Allouez, Bellevue, Howard, Lawrence and Ledgeview are also switching to Lake Michigan surface water as their principal water source via a pipeline project administered by the Central Brown County Water Authority. The Village of Ashwaubenon has started to purchase surface water from the City of Green Bay and is reducing their use of groundwater. At this time, the water supply for all of these communities is in a state of transition as more communities begin to receive Lake Michigan water provided through two recent pipeline projects..

  Water levels within the deep aquifer in part of the Green Bay area have declined by over 300 feet compared to pre-development levels. It is unknown to what degree the aquifer will rebound when the communities switch to surface water for their primary supply. Although the public utilities are switching to surface water as their primary water supply, many industrial users will continue to operate high capacity wells. Some industrial users are switching from municipal water supplies to new private high capacity wells.

- Appleton and Nearby Communities. Appleton relies on surface water. Kaukauna, Little Chute, Kimberly/Combined Locks rely on groundwater. Menasha uses both surface and groundwater.

  Water levels within the deep aquifer have been drawn down by over 200 feet compared to pre-development levels in the Appleton Kaukauna area. Water levels are not expected to recover from their current level because the aquifer will continue to be the primary source of water for the communities that currently rely on groundwater. At this time, there is no plan by those communities to switch to surface water.

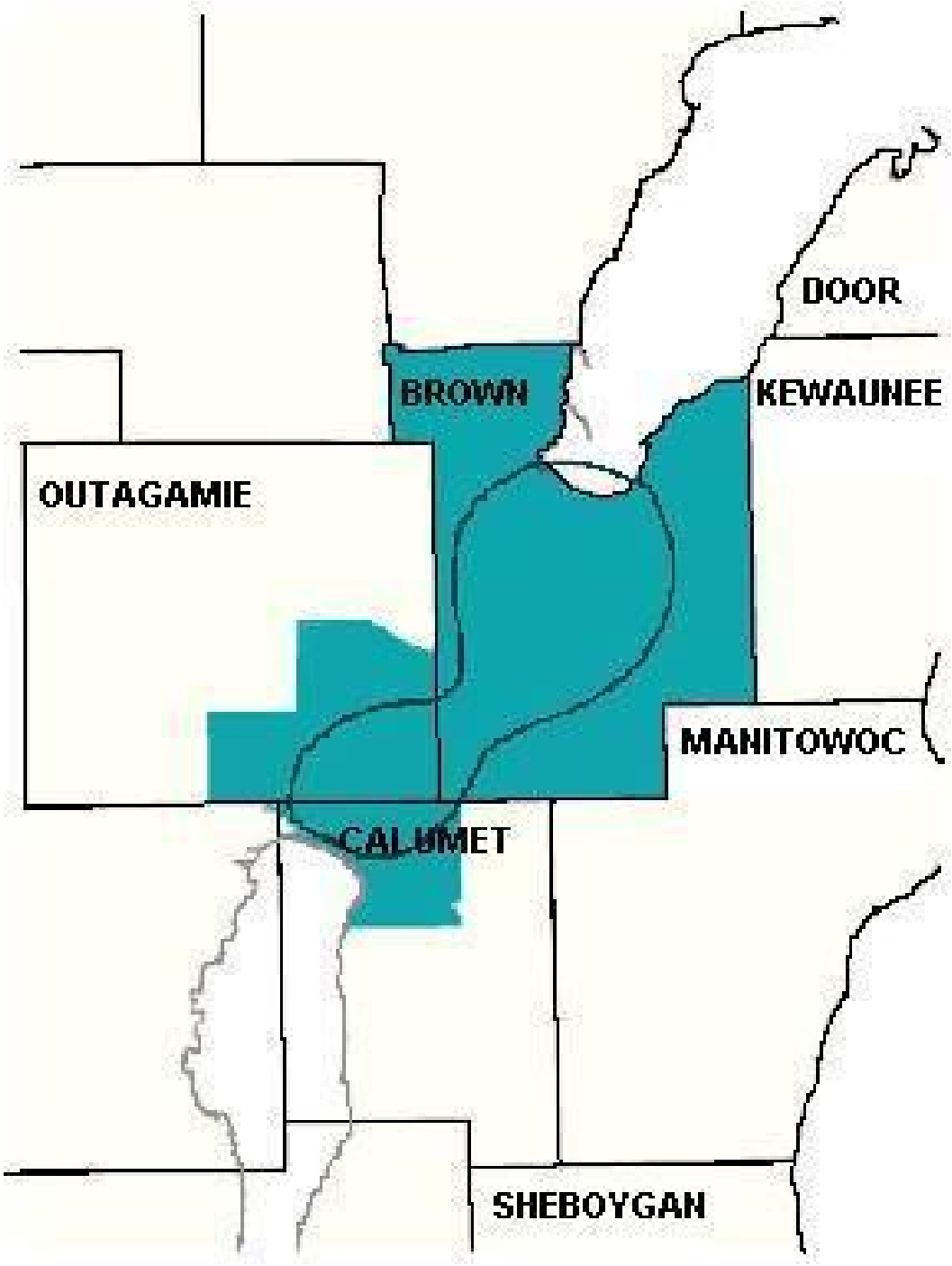

Figure 4 – Northeast Wisconsin Groundwater Management Area

2.3 Groundwater Management Plans

In order for local units of government to effectively manage the groundwater resources within designated groundwater management areas the Groundwater Advisory Committee concluded that comprehensive groundwater management plans will need to be developed in each area. The plans will characterize the groundwater issues in each of the groundwater management areas and will establish the foundation for how the multiple jurisdictions within the groundwater management area will address those issues and monitor their progress.

The Groundwater Advisory Committee formulated many recommendations pertaining to groundwater management plans. These recommendations have been organized into three primary categories consisting of; 1) Those that are general in nature and relate primarily to strategies or broad concepts that should be incorporated into groundwater management plans; 2) Those that should take the form of future legislation; and 3) Those that should be reflected in future administrative rules. The Committee also developed additional recommendations regarding funding of activities within groundwater management areas and regulation of high capacity wells within groundwater management areas.

2.3.a Strategy

The Groundwater Advisory Committee agreed that the concepts conveyed in the following recommendations represent important strategic goals or objectives that should be reflected in groundwater management plans.

- **Groundwater management planning must integrate water use and system planning within land use planning.**
- **Groundwater management planning needs to balance the need for local control of water use and land-use zoning with the lack of synchronization of water resource boundaries with political boundaries.**
- **Groundwater management should balance human health, environmental, economic, and social benefits for the long term, using flexible and adaptive approaches.**
- **The Groundwater Management Plan will manage all of the aquifers in the area concurrently to minimize ecological impact, to limit impacts on base flow of streams, and to sustain groundwater quality and quantity for future generations.**
- **Groundwater management planning in Wisconsin must recognize the constraints of regulations and policies relating to the ability to obtain water from the Great Lakes Basins and the groundwater aquifers.)**

2.3.b Recommendations for Legislation

2003 Wisconsin Act 310 established the concept of groundwater management areas but did not provide additional detail concerning implementation of the concept. Rather, the Act directed the Groundwater Advisory Committee to consider management of groundwater resources within groundwater management areas and identify future legislation that may be needed to implement the conceptual management framework. The following recommendations comprise specific provisions that should form the basis of future legislation to establish the fundamental aspects of groundwater management plans and planning activities.

- **Designated Groundwater Management Areas (GMAs) are required to have an approved Groundwater Management Plan (GMP).**
- **The requirements of a GMP will be established by Administrative Rule.**

- **Different planning entities may do the planning in different parts of the state.**
- **The department will authorize a planning agency for each GMA. Those planning agencies will:**
    - **Be a regional planning commission or a representative organization that includes elected officials or their designees, having jurisdiction in the GMA.**
    - **To the extent possible, be supported by resolutions from local government units.**
    - **Be technically capable to complete the plan in a timely manner.**
- **The department can withdraw or modify the authorization of a planning agency for cause with public input.**
- **If the department withdraws authorization of a planning agency, then it must authorize an alternative planning agency.**
- **The department will approve or disapprove each groundwater management plan after the public hearing for the plan.**

2.3.c Recommendations for Administrative Rules

The Groundwater Advisory Committee also discussed and agreed upon various items that would be more appropriately incorporated into administrative rules. As indicated in the preceding section, the Groundwater Advisory Committee recommends that the legislature promulgate legislation to establish the basic groundwater management planning requirements and direct the Department of Natural Resources to develop administrative rules to fully implement those broad requirements. The following recommendations delineate important concepts to be included in administrative rules pertaining to groundwater management areas and development and implementation of groundwater management plans.

- **GMPs may be different in different areas but all GMPs must meet requirements set by the administrative rule.**
- **Groundwater management plans will identify groundwater management goals specific to the GMA.**
- **Groundwater management plans will be written documents developed with the participation of local government units, owners of high capacity wells, and other interested parties.**
- **Best Management Practices that must be considered in the GMP will be identified in the administrative rule.**
- **The rule will identify the standard that is being managed to.**
- **The administrative rule will identify the type of information that must be reviewed and considered in the GMP.**
- **Groundwater management planning must recognize the need to promote local planning and regulation to protect:**
    - **Groundwater recharge areas**
    - **Existing and future well zone-of-contribution areas, and**
    - **Areas most susceptible to groundwater contamination.**
- **The GMP must include a monitoring component.**
- **The GMP must include a process for adaptive management.**
- **The GMP should include a public participation process**
- **The GMP should include inventory and forecast information as appropriate to the study area.**
- **The GMP must include a conservation component.**

- **The GMP should identify important recharge areas and identify the standard related to quality and quantity to which they will be managed.**
- **The GMP should include an implementation plan.**
- **The GMP should include progress reporting to the DNR as established by rule.**

2.3.d Other Recommendations for Implementation

The Groundwater Advisory Committee recognizes that effective management of groundwater resources within groundwater management areas will require the participation and cooperation of all significant groundwater users in the area. To that end, the Committee has developed the following recommendations to ensure that private high capacity wells are developed and operated in a manner that is consistent with the overall goals and plans developed for the groundwater management area.

- **High capacity well approval criteria in GMAs will include testing, quantitative analysis and numerical simulation requirements and conservation considerations.**
- **Within GMAs, new high capacity well approvals must be consistent with the Groundwater Management Plan adopted for the GMA.**
- **After 10 years, existing high capacity well approvals in GMAs may be modified to be consistent with the Groundwater Management Plan adopted for the GMA**
- **DNR will act consistently in regulatory and non-regulatory activities to further the goals of the Groundwater Management Plan.**

2.4 Funding

Development and implementation of effective groundwater management plans within groundwater management areas will require additional funding and support. The Groundwater Advisory Committee considered various funding options. The recommended approach is to rely on program revenue funds generated through the well notification and high capacity well application fees to support the planning and management activities in groundwater management areas. These fees were created through Act 310 and are also used to fund DNR administration of the groundwater quantity program by the department of natural resources, mitigation programs and research related to groundwater quantity. However, caution will need to be exercised to ensure that the limited funds available are used in an effective manner and the highest priority needs are adequately addressed. The following recommendations define basic concepts that should be embodied in a funding program to support planning and management activities in groundwater management areas as well as groundwater attention areas and other areas of potential concern.

- **The Legislature should provide renewable funding for planning, management, and mitigation in groundwater management areas, groundwater attention areas, and other areas of potential concern.**
- **DNR should develop a rule for funding local aids and mitigation in groundwater management areas and groundwater protection areas. Funds dedicated to mitigation activities in GMAs shall be distributed in accordance with the funding guidelines. In developing the funding guidelines, DNR should consider funding of mitigation in GMAs on a cost-sharing basis. The department will request statutory authority for funding under s. 13.10, Wis. Stats., when the appropriated amount is insufficient to cover mitigation activities.**

Chapter 3: Other Areas Considered by the GAC for Coordinated Management

Act 310 directed the Groundwater Advisory Committee to consider other areas of the state, besides the two identified groundwater management areas, in which significant impacts related to groundwater drawdown may be occurring and whether there is a need for a coordinated groundwater management approach in those areas. The Groundwater Advisory Committee was provided information concerning several areas of the state in which impacts from groundwater drawdown are occurring or likely could occur, including the Little Plover River Watershed, Dane County, St. Croix County and the Central Sands area. The Committee focused its attention on three areas, the Little Plover River Watershed, Dane County and the St. Croix County Area, and formally considered those areas for designation as Groundwater Management Areas. Those three areas and the associated impacts are described in the following sections.

The Groundwater Advisory Committee had extensive discussions concerning identification of these three areas as Groundwater Management Areas. The Committee was nearly evenly divided in regard to the designation of Dane County as a Groundwater Management Area. The Committee discussed St. Croix County, and did not designate it as either a Groundwater Management Area or Groundwater Attention Area. The Committee further determined, unanimously, that the Little Plover River Watershed deserved Groundwater Attention Area status. The Groundwater Advisory Committee acknowledges that the conditions in the Little Plover River Watershed and Dane County are such that they would benefit from a coordinated management approach. As will be discussed later in this report, the Groundwater Advisory Committee is recommending that these two areas be identified as Groundwater Attention Areas (GAA).

3.1 Description of Other Areas Considered by the GAC

3.1.a Little Plover River Watershed

The Little Plover River watershed is approximately 15 square miles surrounding the Little Plover River. The Little Plover River is a Class One Trout Stream that is also classified as an Exceptional Resource Water under Chapter NR 102, Wisconsin Administrative Code.

From 1959 through 1987, the average flow rate of the Little Plover River was approximately 10 cubic feet per second where the river crosses Hoover Road. The lowest measured flow rate during this time was approximately 4 cubic feet per second.-During 2005, there were several weeks when the measured flow rate remained below 3 cubic feet per second and the rate was briefly below 2 cubic feet per second.

The Groundwater Attention Area (GAA) constitutes the surface watershed and the groundwater watershed. The surface water watershed is well mapped; however the exact groundwater watershed boundary of the GAA is not well defined. Weeks, et. al. (1965) mapped the groundwater watershed however, the groundwater watershed boundary may have shifted over time as high capacity wells may have changed the natural groundwater flow patterns of the area.

Research has demonstrated that the large number of high capacity wells in the area is depleting the groundwater resource, which reduces ground water flow to the river. Almost all wells in the area draw water from the sand and gravel aquifer. A few wells are constructed to draw water from the underlying sandstone. There are several dozen high capacity wells within the watershed. The vast majority of high capacity wells are used for crop irrigation, however two municipal wells for the Plover Waterworks are also within the watershed. In addition, there are many other high capacity wells, including a third Plover Waterworks well and an industrial well located a short distance outside of the groundwater watershed that may also influence groundwater flow patterns within the watershed.

In August 2005 and again in July 2006 several reaches of the Little Plover River went dry. In response to the dry-up in 2005, and general concern about flow levels in the river a stakeholder group came into being. This collaborative workgroup represents municipal, industrial, and agricultural high-capacity well owners, the Friends of the Little Plover group, the Portage County Land Conservation Department, UW-Stevens Point groundwater staff, Trout Unlimited, and the Department of Natural Resources. The purpose of the collaborative effort is to develop and implement a management plan to protect the Little Plover River Watershed, while meeting the water needs of the surrounding village, agricultural interests, and others. Such a strategy or plan would include a system that maintains a healthy flow.

3.1.b Dane County

Dane County, located in south central Wisconsin, is the second largest metropolitan area in the State and is the seat of state government. The county constitutes approximately 2.2 percent of the land area and is the home to approximately 8.0 percent of the State's population. All water users in the county rely on groundwater as their source of water.

According to Krohelski, et al. (2000), there are two areas where groundwater levels within the unconfined bedrock aquifer have declined by over 30 feet compared to predevelopment levels. Several springs have stopped flowing or only flow intermittently. During pre-development times, the lakes and other surface waters were fed by groundwater. However, as the groundwater levels in the aquifers have been drawn down, the flow has reversed in some areas so that surface waters now replenish the uppermost aquifers.

Large water users rely on the bedrock aquifer system. In rural areas, the vast majority of water users also rely on the bedrock aquifer system, however a small number of rural domestic well users rely on groundwater from sand and gravel deposits that overlie the bedrock.

The decline of groundwater levels in the bedrock aquifers is largely limited to the urbanized area within the center of the county. At the county boundaries, the water levels in the aquifers are relatively unchanged from pre-development levels.

From 1992 through 1997, the Dane County Regional Planning Commission, Wisconsin Geological and Natural History Survey, U.S. Geological Survey and the Department of Natural Resources conducted a thorough Regional Hydrologic study. Thus, many resources are available to effectively plan future actions with regard to groundwater/surface water interactions.

3.1.c St. Croix County Area

St. Croix County, one of the western-most counties in Wisconsin, shares a border with the State of Minnesota near the Minneapolis and St. Paul metropolitan area. Although St. Croix County is predominantly rural, it is undergoing significant growth with additional residential development due to the proximity of a major population center across the state border, St. Croix is the fastest growing County in the State. The Department of Administration (DOA) has estimated that the population of the county grew by 23.5 percent from April 1, 2000 to January 1, 2006, whereas the population growth estimate for the State as a whole was 4.7 percent. DOA has also projected that the population growth rate of the county from 2000 to 2030 will be 82.8 percent while the State as a whole is expected to grow by 28.0 percent. In 2004 the population of the metropolitan area of Minnesota was nearly 2.8 million. Between 2004 and 2030 the population of the Minnesota metropolitan area is projected to increase by about 33%.

St. Croix County shares the same bedrock aquifer system as the Minneapolis and St. Paul metropolitan area. Although Minneapolis, St. Paul and several neighboring communities primarily rely on surface waters, the outer ring of suburbs relies mostly on groundwater. Approximately two-thirds of the total non-power generation water consumed in the Minnesota metropolitan area is from groundwater sources.

Karst bedrock in St. Croix County is susceptible to contamination and heavy use of the aquifer is steadily increasing. Groundwater research in St. Croix, Pierce and Polk Counties is currently being conducted by the United States Geological Survey, the Wisconsin Geological and Natural History Survey and the University of Wisconsin

3.2 Recommendations for Legislation for Groundwater Attention Areas

The Groundwater Advisory Committee does not believe that any of the three areas discussed above warrant designation as a Groundwater Management Area at the present time. As stated previously, this issue evoked considerable debate and several members of the Committee supported identification of additional Groundwater Management Areas. The Committee defeated motions to recommend identification of Dane County and the Little Plover River Watershed as additional Groundwater Management Areas and tabled a motion to identify St. Croix County as a Groundwater Attention Area. However, the Committee strongly endorses an approach whereby proactive planning and management strategies should be encouraged in areas in which groundwater quantity problems have developed or may be emerging.

The Committee recommends a two-tiered system that would attempt to identify and address potential problem areas before they develop to the level of severity commensurate with designation as a groundwater management area. Of the three areas discussed above, the Groundwater Advisory Committee concluded that the conditions in the Little Plover River watershed and Dane County are of a more immediate nature and warrant focused and coordinated evaluation and management. The Groundwater Advisory Committee determined that these two areas should be identified as Groundwater Attention Areas (Figure 5). Formal identification of an area as a Groundwater Attention Area should be viewed as an early warning to groundwater users within that area that they could be facing substantial future groundwater problems unless proactive steps are taken to address the issues. If effective actions are not implemented, those areas could ultimately be designated as Groundwater Management Areas. The following recommendations relate to Groundwater Attention Areas:

- **The State should encourage coordinated groundwater management planning in order to avoid or reduce future groundwater problems.**
- **To facilitate proactive planning and mitigation strategies, a process short of GMA-designation should be developed to identify areas that are likely to have future groundwater problems: Groundwater Attention Areas.**
- **Areas designated as Groundwater Attention Areas shall be eligible to receive funding to support research, pilot programs, management strategies and planning activities.**
- **The Legislature should designate the following as Groundwater Attention Areas:**
    a. **Dane County**
    b. **Little Plover River Watershed**

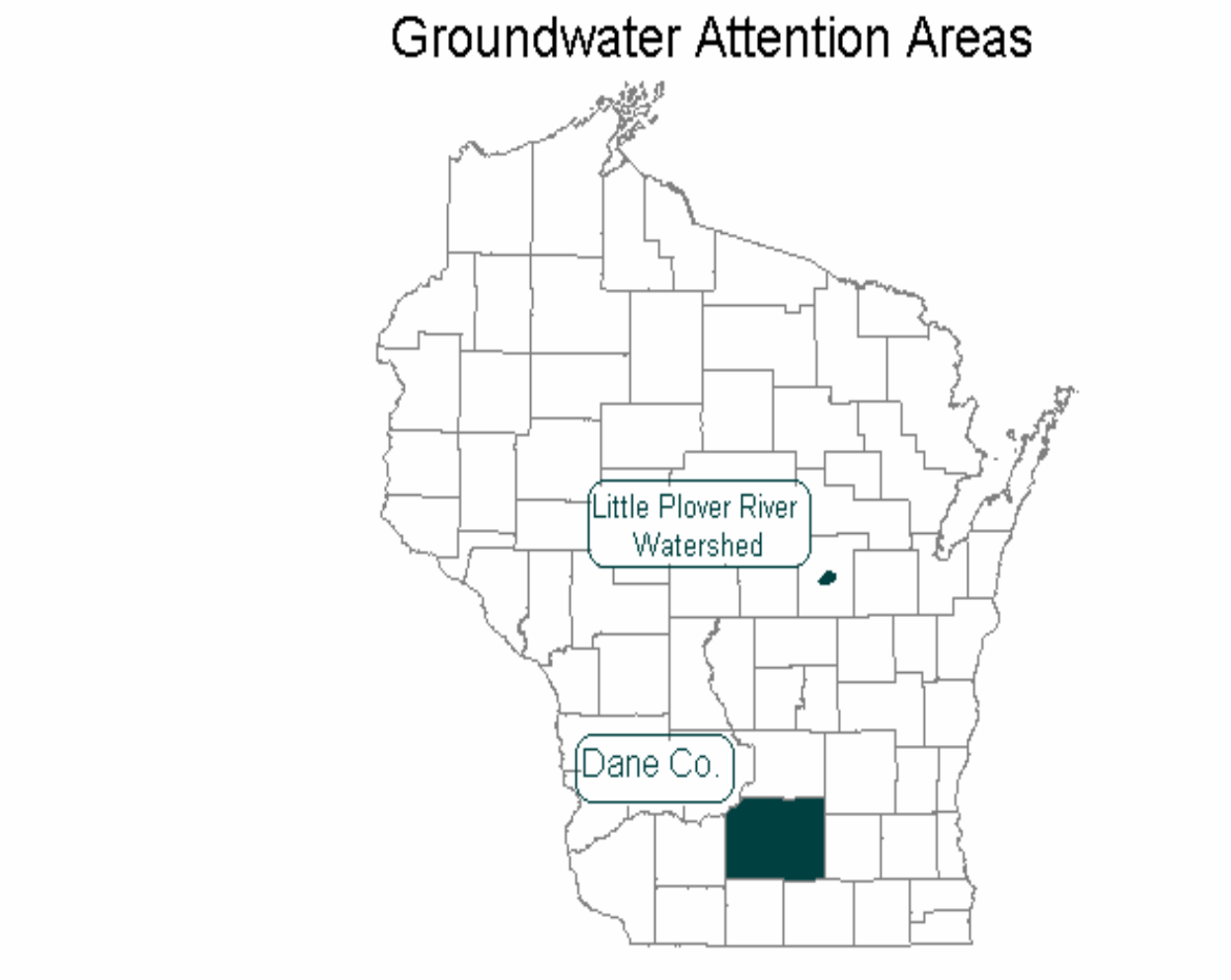

Figure 5 – Recommended Groundwater Attention Areas

3.3 Recommendations for Administrative Rules for Groundwater Attention Areas

Administrative rules will be necessary to implement the newly recommended concept of a groundwater attention area

- **A process or mechanism needs to be created to determine when an area should be classified as a GMA or Groundwater Attention Area and also when it is appropriate to change the classification of an area.**
- **The rules shall designate Groundwater Attention Areas, consistent with those in the preceding section, and shall delineate a funding program to support research, management strategies and planning activities in those areas.**

3.4 Consideration of Future GMA Designation and Removal of Designation

The two groundwater management areas established in Act 310 were defined and delineated based on areas that have experienced at least 150 feet of groundwater drawdown. While this criteria may be appropriate for the two identified areas, it is too limiting and likely not appropriate for designation of future groundwater management areas. Due to the variety of geologic and hydrogeologic settings in the state, areas may develop severe impacts related to groundwater drawdown without approaching 150 feet of drawdown. This is especially true in areas with unconfined aquifers. The Groundwater Advisory Committee did not establish specific criteria to be used for designation of additional groundwater management areas. The need for future designations will be based on assessment of impacts in specific areas and the criteria used to support designation as a groundwater management area may vary from one area to another. The following recommendations summarize the Groundwater Advisory Committee's deliberations concerning future designation of groundwater management areas and establish a process by which such designations would be made or modified.

- **Designation of GMAs should not be restricted to 150-foot drawdown in a confined aquifer or exclude unconfined aquifers.**
- **Every other year, beginning in 2010, the WGNHS in consultation with the USGS, will identify to the Groundwater Coordinating Council (GCC) any "regionally defined" areas of the state where groundwater quantity availability, coupled with water quality degradation, may warrant designation as a GMA or GAA. The WGNHS shall also recommend whether the designation of any areas previously identified as a GMA or GAA should be modified or terminated.**
- **Every other year, beginning in 2010, authorized representatives of areas formally designated as a GMA or GAA may petition the GCC to consider modification or termination of its designation as a GMA or GAA.**
- **The GCC will conduct a review of the information provided by the WGNHS and shall consider any petitions from areas formally designated as a GMA or GAA and, within six months, forward to the DNR recommendations concerning the need for designation of identified areas as potential GAAs or GMAs. GCC shall also forward recommendations concerning modification of the designation of areas previously identified as a GAAs or GMAs. If the prior designation was mandated by statute the recommendation shall be submitted to the Legislature and if the designation was specified by administrative rule the recommendation shall be submitted to the DNR.**
- **Within six months of receipt of the GCC recommendation to identify a new GMA or GAA or change the designation of a previously designated area, the DNR shall submit a report to the Natural Resources Board that includes a thorough environmental, economic and social analysis of the GCC findings and, and based on that analysis, recommendations for rule-making to formally designate additional GAAs and GMAs or modify an existing designation.**
- **In accordance with the recommendations of the Natural Resources Board and within one year from receiving direction from the Natural Resources Board, DNR will complete the rule promulgation process to establish the appropriate designations.**

3.5 Funding

As discussed in section 2.4 above, the Groundwater Advisory Committee recommends that a specific funding process be developed to support planning, research and management activities in Groundwater Attention Areas. An underlying assumption for this recommendation is the perception that drawdown-related problems in areas formally designated as Groundwater Attention Areas are more advanced than in other areas and as such, these areas warrant more formal funding and focused effort to avoid future designation as groundwater management areas.

- **The Department, using available funds and resources, should at its discretion provide assistance and support in areas where potential groundwater quantity problems may be developing. The department should encourage proactive stakeholder initiatives, consistent with the State's goal of avoiding serious future water supply/groundwater and surface water quantity problems.**

This has already begun in the Little Plover River Watershed where the DNR has met with, and received cooperation from the affected municipalities and private well owners.

Chapter 4: Mitigation Program for Groundwater Management Areas

4.1 Background and Discussion

Act 310 directed the Groundwater Advisory Committee to formulate recommendations concerning a program to mitigate the impacts of existing wells in groundwater management areas. The statute also contemplates a program in which the costs of mitigation ordered by the DNR must be fully funded by the DNR. The Groundwater Advisory Committee recognizes that full costs associated with mitigation of a municipal or industrial well in a groundwater management area could easily consume the amount of funds available to the Department in a given year. Thus, the option of ordering mitigation will need to be exercised in a judicious manner and considered to be a last resort. A cooperative and voluntary approach to problem-solving will be more productive and cost-effective in those instances where operation of an existing well is inconsistent with the approved groundwater management plan and is resulting in substantial adverse impacts. The Committee also acknowledges that supplementary statutory authority is needed to enable the DNR to secure additional funding to cover costs of mitigation in cases where no other options are available and a relatively rapid response is needed.

4.2 Recommendations for Legislation

- **The department will request statutory authority for funding under s. 13.10, Wis. Stats., when the appropriated amount is insufficient to cover mitigation activities.**
- **In developing the funding guidelines, DNR should consider funding of mitigation in GMAs on a cost-sharing basis.**

4.3 Recommendations for Administrative Rules

- **Administrative rules are needed to establish processes and criteria for determining the need for mitigation.**
- **The administrative rules will establish funding guidelines.**

4.4 Funding

As with other funding issues, the funding of mitigation activities will be accomplished through the well notification fees and high capacity well application fees. Given the other demands for these funds, it is unlikely that the level of available funding at any given time will be adequate to fully fund a substantial mitigation project in a groundwater management area. Changes in the funding structure are necessary.

- **In developing the funding guidelines, DNR should consider funding of mitigation in GMAs on a cost-sharing basis.**
- **Funds dedicated to mitigation activities shall be disbursed in accordance with the funding guidelines that also address planning and implementation aspects of groundwater management areas.**

Chapter 5: Other Recommendations

A comprehensive groundwater monitoring program is an essential component in an effective statewide groundwater management strategy. The existing groundwater monitoring network jointly coordinated by the Wisconsin Geological & Natural History Survey and the U.S. Geological Survey generates valuable information and could serve as a sound foundation but, to be truly effective, the monitoring and data management systems need to be enhanced. The following recommendation is intended to ensure that an effective groundwater level monitoring system is established and adequately supported.

- **The Legislature should provide a structure for renewable funding for the long-term operation and maintenance of groundwater level and surface water level monitoring and data management systems throughout the state. The monitoring effort should consist of two elements; a base level monitoring system that covers the state, and targeted monitoring systems in existing or potential GMAs that are designed to support the specific needs and management objectives of the area. The targeted monitoring programs should be designed with substantial support and guidance from the GMA or potential GMA.**

The Groundwater Advisory Committee acknowledges that it will take several years to fully implement the provisions of Act 310 and the recommendations contained in this report. The Committee made the following recommendation to encourage the Legislature to conduct a formal review of the effectiveness of the initial phase of implementation of Act 310.

- **After 10 years, the legislature shall establish a committee to evaluate the effectiveness of the statute (s. 281.34).**

Chapter 6: Summary of Recommendations

6.1 Legislative Recommendations

The Groundwater Advisory Committee is proposing a wide range of recommendations that will necessitate statutory authorization before they can be implemented. A small number of the recommendations are actually suggesting changes in existing statutes while the majority would augment existing statutes by creating clear statutory authority to implement the planning and management structure envisioned by the Groundwater Advisory Committee.

Of the recommended changes to existing statutory provisions, the most substantial relate to providing clear statutory authorization to the DNR to promulgate necessary administrative rules consistent with this report and modification of existing high capacity well approvals for properties within groundwater management areas. The Groundwater Advisory Committee recognizes that comprehensive administrative rules will be needed to oversee the complex planning, management, mitigation and funding aspects of groundwater management areas and groundwater attention areas. The Committee is also recommending changes to existing statutes to specify that after 10 years, the DNR is enabled to modify existing approvals for wells within groundwater management areas so that the operation of high capacity wells are consistent with approved groundwater management plans. Current statutes provide limited opportunity for the DNR to modify existing approvals.

Act 310 created the concept of groundwater management areas but delegated to the Groundwater Advisory Committee the general responsibility for devising a workable approach. Most of the legislative recommendations put forward by the Groundwater Advisory Committee would basically provide the necessary statutory authority to establish and implement the fundamental elements of an effective groundwater management structure in groundwater management areas. These include the basic framework for groundwater management plans, provisions related to funding, creation of the Groundwater Attention Area concept and continued support for a statewide groundwater monitoring network.

6.2 Recommendations for Administrative Rules

The Groundwater Advisory Committee has made extensive recommendations for concepts that should be included in future administrative rules. Some of the concepts are very specific while others are quite broad in nature. These recommendations represent the key elements and ideas that the Groundwater Advisory Committee determined should either be included in or defined by administrative rules. The current recommendations should not be viewed as the final and definitive identification of issues for inclusion in the rules. Clearly, as additional legislation is developed and the rule-making process proceeds, additional needs will be identified.

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Population estimates from 2000 to 2030 by county.
http://www.doa.state.wi.us/docs_view2.asp?docid=2066

APPENDIX A

LOCAL GOVERNMENTAL UNITS IN GROUNDWATER MANAGEMENT AREAS, GROUNDWATER ATTENTION AREAS AND ST CROIX COUNTY

COMMUNITIES THAT ARE LOCATED IN MULTIPLE COUNTIES ARE LISTED IN ALL COUNTIES, FOR EXAMPLE THE CITY OF MILWAUKEE IS LISTED IN ALL THREE COUNTIES THAT IT IS LOCATED IN. UTILITIES THAT ARE LOCATED IN MULTIPLE COUNTIES ARE ONLY LISTED IN ONE COUNTY. LIST OF COMMUNITIES FROM DEPARTMENT OF ADMINISTRATION, LIST OF UTILITIES FROM THE PUBLIC SERVICE COMMISSION. NOTE THAT COUNTY GOVERNMENTS ARE ALSO CONSIDERED TO BE LOCAL UNITS OF GOVERNMENT.

ST CROIX COUNTY WAS CONSIDERED FOR RECOMMENDATION TO THE LEGISLATURE FOR DESIGNATION AS A GROUNDWATER MANAGEMENT AREA BY THE COMMITTEE, BUT WAS NOT RECOMMENDED.

BROWN COUNTY (NEGMA)

TOWN OF EATON
TOWN OF GLENMORE
TOWN OF GREEN BAY
TOWN OF HOLLAND
TOWN OF HUMBOLDT
TOWN OF LAWRENCE
TOWN OF LEDGEVIEW
TOWN OF MORRISON
TOWN OF NEW DENMARK
TOWN OF PITTSFIELD
TOWN OF ROCKLAND
TOWN OF SCOTT
TOWN OF WRIGHTSTOWN
VILLAGE OF ALLOUEZ
VILLAGE OF ASHWAUBENON
VILLAGE OF BELLEVUE
VILLAGE OF DENMARK
VILLAGE OF HOBART
VILLAGE OF HOWARD
VILLAGE OF PULASKI
VILLAGE OF SUAMICO
VILLAGE OF WRIGHTSTOWN
CITY OF DE PERE
CITY OF GREEN BAY
ALLOUEZ VILLAGE OF WATER DEPT
ASHWAUBENON WATER & SEWER UTILITY
BELLEVUE WATER UTILITY
DE PERE WATER DEPARTMENT
DENMARK MUNICIPAL WATER UTILITY
GREEN BAY WATER UTILITY
HOBART TOWN OF WATER UTILITY
HOLLAND TOWN OF SANITARY DIST #1
LAWRENCE TOWN OF WATER UTILITY
LEDGEVIEW SANITARY DISTRICT NO 2
PULASKI WATER DEPT
ROCKLAND MUN WATER & SEWER UTIL
SCOTT TOWN OF WATER UTILITY
SUAMICO WATER UTILITY

CALUMET COUNTY (NEGMA)

TOWN OF HARRISON
TOWN OF WOODVILLE
VILLAGE OF SHERWOOD
SHERWOOD VILLAGE OF WTR & SWR UTY

DANE COUNTY (DANE COUNTY GAA)

TOWN OF ALBION
TOWN OF BERRY
TOWN OF BLACK EARTH
TOWN OF BLOOMING GROVE
TOWN OF BLUE MOUNDS
TOWN OF BRISTOL
TOWN OF BURKE
TOWN OF CHRISTIANA
TOWN OF COTTAGE GROVE
TOWN OF CROSS PLAINS
TOWN OF DANE
TOWN OF DEERFIELD
TOWN OF DUNKIRK
TOWN OF DUNN
TOWN OF MADISON
TOWN OF MAZOMANIE
TOWN OF MEDINA
TOWN OF MIDDLETON
TOWN OF MONTROSE
TOWN OF OREGON
TOWN OF PERRY
TOWN OF PLEASANT SPRINGS
TOWN OF PRIMROSE
TOWN OF ROXBURY
TOWN OF RUTLAND
TOWN OF SPRINGDALE
TOWN OF SPRINGFIELD
TOWN OF SUN PRAIRIE
TOWN OF VERMONT
TOWN OF VERONA
TOWN OF VIENNA

TOWN OF WESTPORT
TOWN OF WINDSOR
TOWN OF YORK
VILLAGE OF BELLEVILLE
VILLAGE OF BLACK EARTH
VILLAGE OF BLUE MOUNDS
VILLAGE OF BROOKLYN
VILLAGE OF CAMBRIDGE
VILLAGE OF COTTAGE GROVE
VILLAGE OF CROSS PLAINS
VILLAGE OF DANE
VILLAGE OF DEERFIELD
VILLAGE OF DEFOREST
VILLAGE OF MAPLE BLUFF
VILLAGE OF MARSHALL
VILLAGE OF MAZOMANIE
VILLAGE OF MCFARLAND
VILLAGE OF MOUNT HOREB
VILLAGE OF OREGON
VILLAGE OF ROCKDALE
VILLAGE OF SHOREWOOD HILLS
VILLAGE OF WAUNAKEE
CITY OF EDGERTON
CITY OF FITCHBURG
CITY OF MADISON
CITY OF MIDDLETON
CITY OF MONONA
CITY OF STOUGHTON
CITY OF SUN PRAIRIE
CITY OF VERONA
BELLEVILLE MUN WATER & SEWER UTY
BLACK EARTH VILL OF WATER UTILITY
BLUE MOUNDS VILL OF MUNICIPAL WT UT
BRISTOL TN OF WATER UTILITY
BROOKLYN WATER UTILITY
BURKE UTILITY DISTRICT NO 1
CAMBRIDGE MUNICIPAL WATER UTILITY
COTTAGE GROVE WATER & SEWER UTIL
CROSS PLAINS WATER UTIL
DANE WATER & SEWER UTY
DEERFIELD WATER UTILITY
DEFOREST MUNICIPAL WATER UTILITY
EDGERTON MUNICIPAL WATER UTILITY
FITCHBURG WATER UTILITY
VILL OF HOWARD WATER & SEWER DEPT
MADISON MET SEWERAGE DIST
MADISON WATER UTILITY
MAPLE BLUFF VILLAGE OF MUN WTR UTY
MARSHALL WATER AND SEWER UTILITY
MAZOMANIE WATER UTILITY
MCFARLAND WATER & SEWER UTILITY
MIDDLETON MUNICIPAL WATER UTILITY
MONONA WATER UTILITY
MOUNT HOREB WATER & SEWER UTILITY
OREGON MUN WATER & SEWER UTILITY
SHOREWOOD HILLS VILL OF WATER UTY
SHOREWOOD MUNICIPAL WATER UTILITY
STOUGHTON WATER UTILITY
SUN PRAIRIE WATER AND LIGHT COMMSN
VERONA WATER UTILITY
WAUNAKEE WATER & LIGHT COMMISSION
WESTPORT WATER UTILITY
WINDSOR SANITARY DISTRICT NUMBER 1

KENOSHA COUNTY (SEGMA)
TOWN OF BRIGHTON
TOWN OF BRISTOL
TOWN OF PARIS
TOWN OF RANDALL
TOWN OF SALEM
TOWN OF SOMERS
TOWN OF WHEATLAND
VILLAGE OF GENOA CITY
VILLAGE OF PADDOCK LAKE
VILLAGE OF PLEASANT PRAIRIE
VILLAGE OF SILVER LAKE
VILLAGE OF TWIN LAKES
CITY OF KENOSHA
KENOSHA WATER UTILITY
PADDOCK LAKE MUN WATER UTILITY
PLEASANT PRAIRIE VILL OF WTR UTY
SOMERS WATER UTILITY TOWN OF

MILWAUKEE COUNTY (SEGMA)
VILLAGE OF BAYSIDE
VILLAGE OF BROWN DEER
VILLAGE OF FOX POINT
VILLAGE OF GREENDALE
VILLAGE OF HALES CORNERS
VILLAGE OF RIVER HILLS
VILLAGE OF SHOREWOOD
VILLAGE OF WEST MILWAUKEE
VILLAGE OF WHITEFISH BAY
CITY OF CUDAHY
CITY OF FRANKLIN
CITY OF GLENDALE
CITY OF GREENFIELD
CITY OF MILWAUKEE
CITY OF OAK CREEK
CITY OF SAINT FRANCIS
CITY OF SOUTH MILWAUKEE
CITY OF WAUWATOSA
CITY OF WEST ALLIS
BROWN DEER WATER PUBLIC UTILITY
CUDAHY CITY OF WATER UTILITY
FOX POINT VILL OF WATER UTILITY
FRANKLIN MUNICIPAL WATER UTILITY
GLENDALE WATER UTILITY
GREENDALE VILLAGE OF WATER UT
MILWAUKEE MET SEWERAGE DIST
MILWAUKEE WATER WORKS
OAK CREEK WATER & SEWER UTILITY
SOUTH MILWAUKEE WATER UTILITY
WAUWATOSA WATER UTILITY
WEST ALLIS MUNICIPAL WATER UTILITY
WHITEFISH BAY VILLAGE OF WTR UTY

OUTAGAMIE COUNTY (NEGMA)

TOWN OF BUCHANAN
TOWN OF FREEDOM
TOWN OF GRAND CHUTE
TOWN OF KAUKAUNA
TOWN OF VANDENBROEK
VILLAGE OF COMBINED LOCKS
VILLAGE OF HOWARD
VILLAGE OF KIMBERLY
VILLAGE OF LITTLE CHUTE
VILLAGE OF WRIGHTSTOWN
CITY OF APPLETON
CITY OF KAUKAUNA
APPLETON WATER DEPT
COMBINED LOCKS WATER UTILITY
FREEDOM SANITARY DISTRICT NO 1
KAUKAUNA UTILITIES
LITTLE CHUTE MUNICIPAL WATER DEPT
WRIGHTSTOWN TOWN OF SANIT DIST 1
WRIGHTSTOWN VILLAGE OF WTR UTILITY

OZAUKEE COUNTY (SEGMA)
TOWN OF BELGIUM
TOWN OF CEDARBURG
TOWN OF FREDONIA
TOWN OF GRAFTON
TOWN OF PORT WASHINGTON
TOWN OF SAUKVILLE
VILLAGE OF BAYSIDE
VILLAGE OF BELGIUM
VILLAGE OF FREDONIA
VILLAGE OF GRAFTON
VILLAGE OF NEWBURG
VILLAGE OF SAUKVILLE
VILLAGE OF THIENSVILLE
CITY OF CEDARBURG
CITY OF MEQUON
CITY OF PORT WASHINGTON
BELGIUM MUNICIPAL WATER UTILITY
CEDARBURG LIGHT &WATER COMMISSION
FREDONIA MUNICIPAL WATER UTILITY
GRAFTON WATER & WASTEWATER COMM
TOWN OF GRAND CHUTE SANITARY DIST 1
PORT WASHINGTON MUN WATER UTILITY
SAUKVILLE MUN WATER UTILITY
TOWN OFSCOTT SANITARY DISTRICT #1
TOWN OF TROY SANT DIST #1

PORTAGE COUNTY (LITTLE PLOVER RIVER WATERSHED GAA)
TOWN OF PLOVER
TOWN OF STOCKTON
VILLAGE OF PLOVER
PLOVER VILL OF MUN WTR UTY

RACINE COUNTY (SEGMA)
TOWN OF BURLINGTON
TOWN OF DOVER
TOWN OF NORWAY
TOWN OF RAYMOND
TOWN OF ROCHESTER
TOWN OF WATERFORD
TOWN OF YORKVILLE
VILLAGE OF CALEDONIA
VILLAGE OF ELMWOOD PARK
VILLAGE OF MOUNT PLEASANT
VILLAGE OF NORTH BAY
VILLAGE OF ROCHESTER
VILLAGE OF STURTEVANT
VILLAGE OF UNION GROVE
VILLAGE OF WATERFORD
VILLAGE OF WIND POINT
CITY OF BURLINGTON
CITY OF RACINE
CALEDONIA TN OF WTR UTY DIST NO 1
RACINE WASTEWATER UTILITY
RACINE WATER WORKS COMMISSION
STURTEVANT WATER AND SEWER UTILITY
UNION GROVE MUN WATER UTILITY
WATERFORD VILLAGE OF WTR & SWR UTY
WIND POINT MUNICIPAL WATER UTILITY
YORKVILLE TOWN OF WATER UTILITY

ST CROIX COUNTY (CONSIDERED BUT NOT RECOMMENDED FOR GMA)
TOWN OF BALDWIN
TOWN OF CADY
TOWN OF CYLON
TOWN OF EAU GALLE
TOWN OF EMERALD
TOWN OF ERIN PRAIRIE
TOWN OF FOREST
TOWN OF GLENWOOD
TOWN OF HAMMOND
TOWN OF HUDSON
TOWN OF KINNICKINNIC
TOWN OF PLEASANT VALLEY
TOWN OF RICHMOND
TOWN OF RUSH RIVER
TOWN OF SAINT JOSEPH
TOWN OF SOMERSET
TOWN OF SPRINGFIELD
TOWN OF STANTON
TOWN OF STAR PRAIRIE
TOWN OF TROY
TOWN OF WARREN
VILLAGE OF BALDWIN
VILLAGE OF DEER PARK
VILLAGE OF HAMMOND
VILLAGE OF NORTH HUDSON
VILLAGE OF ROBERTS
VILLAGE OF SOMERSET
VILLAGE OF STAR PRAIRIE
VILLAGE OF SPRING VALLEY
VILLAGE OF WILSON
VILLAGE OF WOODVILLE
CITY OF GLENWOOD CITY
CITY OF HUDSON
CITY OF NEW RICHMOND

CITY OF RIVER FALLS
BALDWIN MUNICIPAL WATER UTILITY
GLENWOOD CITY MUN WATER UTILITY
HAMMOND MUNICIPAL WATER UTILITY
HUDSON PUBLIC UTILITIES
NEW RICHMOND MUN WATER & SEWER
RIVER FALLS MUNICIPAL UTILITY
ROBERTS VILL OF WATER UTILITY
SOMERSET VILLAGE OF WATER UTILITY
SPRING VALLEY WATERWORKS
STAR PRAIRIE MUNICIPAL WATER UTILITY
WILSON VILLAGE OF MUN WTR UTY
WOODVILLE WATER AND SEWER UTY

WALWORTH COUNTY (SEGMA)
TOWN OF BLOOMFIELD
TOWN OF EAST TROY
TOWN OF GENEVA
TOWN OF LINN
TOWN OF LYONS
TOWN OF SPRING PRAIRIE
VILLAGE OF EAST TROY
VILLAGE OF GENOA CITY
VILLAGE OF MUKWONAGO
CITY OF BURLINGTON
CITY OF LAKE GENEVA
BURLINGTON MUNICIPAL WATERWORKS
EAST TROY SANITARY DISTRICT #3
EAST TROY VILL OF MUN WTR UTY
GENOA CITY VILLAGE OF MUN WATER UT
KIMBERLY WATER DEPARTMENT
LAKE GENEVA UTILITY COMMISSION

WASHINGTON COUNTY (SEGMA)
TOWN OF ADDISON
TOWN OF BARTON
TOWN OF ERIN
TOWN OF FARMINGTON
TOWN OF GERMANTOWN
TOWN OF HARTFORD
TOWN OF JACKSON
TOWN OF POLK
TOWN OF RICHFIELD
TOWN OF TRENTON
TOWN OF WEST BEND
VILLAGE OF GERMANTOWN
VILLAGE OF JACKSON
VILLAGE OF NEWBURG
VILLAGE OF SLINGER
CITY OF HARTFORD
CITY OF MILWAUKEE
CITY OF WEST BEND
GERMANTOWN WATER UTILITY
CITY OF HARTFORD UTILITIES
JACKSON VILL OF WATER UTILITY
SLINGER UTILITIES
WEST BEND CITY OF WATER UTY

WAUKESHA COUNTY (SEGMA)
TOWN OF BROOKFIELD
TOWN OF DELAFIELD
TOWN OF EAGLE
TOWN OF GENESEE
TOWN OF LISBON
TOWN OF MERTON
TOWN OF MUKWONAGO
TOWN OF OCONOMOWOC
TOWN OF OTTAWA
TOWN OF SUMMIT
TOWN OF VERNON
TOWN OF WAUKESHA
VILLAGE OF BIG BEND
VILLAGE OF BUTLER
VILLAGE OF CHENEQUA
VILLAGE OF DOUSMAN
VILLAGE OF EAGLE
VILLAGE OF ELM GROVE
VILLAGE OF HARTLAND
VILLAGE OF LAC LA BELLE
VILLAGE OF LANNON
VILLAGE OF MENOMONEE FALLS
VILLAGE OF MERTON
VILLAGE OF MUKWONAGO
VILLAGE OF NASHOTAH
VILLAGE OF NORTH PRAIRIE
VILLAGE OF OCONOMOWOC LAKE
VILLAGE OF PEWAUKEE
VILLAGE OF SUSSEX
VILLAGE OF WALES
CITY OF BROOKFIELD
CITY OF DELAFIELD
CITY OF MILWAUKEE
CITY OF MUSKEGO
CITY OF NEW BERLIN
CITY OF OCONOMOWOC
CITY OF PEWAUKEE
CITY OF WAUKESHA
BROOKFIELD MUNICIPAL WATER UTILITY
BROOKFIELD TN OF SANITARY DIST NO 4
BUTLER PUBLIC WATER UTILITY
CITY OF MUSKEGO SEWER UTILITY
DELAFIELD MUNICIPAL WATER UTILITY
DOUSMAN WATER UTILITY
EAGLE VILL OF MUNICIPAL WTR UTY
HARTLAND MUN WATER UTILITY
MENOMONEE FALLS VILLAGE OF WTR UTY
MUKWONAGO MUNICIPAL WATER UTILITY
MUSKEGO CITY OF WATER PUBLIC UTY
NEW BERLIN WATER UTILITY
OCONOMOWOC CITY OF UTILITIES
PEWAUKEE CITY OF WATER UTILITY
PEWAUKEE VILLAGE OF WATER UTILITY
SUSSEX VILLAGE OF WTR PUBLIC UTY
WAUKESHA WATER UTILITY CITY OF